

WHAT IS CLAIMED IS:

- 1 1. An arrangement of configurable logic blocks (CLB) in customer-specific circuits, the
- 2 arrangement comprising:
 - 3 an input data node for carrying input data;
 - 4 a CLB control logic circuit having a first input, a second input, a third input, a fourth
 - 5 input and an output;
 - 6 at least one look-up table in which a switching function of at least one conditional branch
 - 7 is implemented with content addressability, wherein the at least one look-up table generates an
 - 8 "if then else" branch that realizes a comparison of the input data with comparison data previously
 - 9 stored in the at least one look-up table, and wherein a result output of the at least one look-up
 - 10 table is provided to a third input of the CLB control logic;
 - 11 an input data bus coupled between the input data node and a bus input of the at least one
 - 12 look-up table, wherein the first input of the CLB control logic circuit is coupled to the input data
 - 13 node via the input data bus;
 - 14 at least one multiplexer having a control input coupled to the input data node and also to
 - 15 the first input of the CLB control logic circuit via at least part of the bit width of the input data
 - 16 bus, an output of the at least one multiplexer being coupled to a fourth input of the CLB control
 - 17 logic;
 - 18 a control input node coupled via a control bus to the second input of the CLB control
 - 19 logic; and
 - 20 at least one register data bus coupled between a register data bus output of the at least one
 - 21 look-up table and a bus input of the at least one multiplexer.

1 2. The arrangement of claim 1, wherein the at least one look-up table (2), (12) is realized
2 with the conditional branch implemented in it by such a switching function, and wherein the at
3 least one look-up table (2), (12) comprises:

4 a register which stores the comparison data; and

5 a comparator coupled to the input data node and the register, the comparator operable to
6 compare the input data with the comparison data.

1 3. The arrangement of claim 2 wherein the bus input of the at least one look-up table is
2 coupled to a first bus input of the comparator and wherein a bus output of the register (4), (14) is
3 coupled to a second bus input of the comparator and also to the register data bus output of the at
4 least one look-up table, and wherein an output of the comparator is coupled to the result output
5 of the at least one look-up table.

1 4. The arrangement of claim 1 wherein the configurable logic blocks are realized in Field
2 Programmable Gate Array (FPGA) technology.

1 5. The arrangement of claim 1 wherein the output of the CLB control logic serving as an
2 output of the CLB.

1 6. A logic circuit comprising:
2 a register;
3 a comparator with a first input coupled to the register and with a second input coupled to
4 an input node;
5 a multiplexer with an input coupled to the register; and
6 a control block with inputs coupled to the multiplexer, the comparator, the input node and
7 an input control node, wherein the logic circuit realizes an "if then else" branch based upon
8 information carried at the input node and information stored in the register.

1 7. The circuit of claim 6 wherein the logic circuit comprises a configurable logic block.

1 8. The circuit of claim 7 wherein the configurable logic blocks are realized in Field
2 Programmable Gate Array (FPGA) technology.

1 9. The circuit of claim 6 and further comprising:
2 a second register;
3 a second comparator with a first input coupled to the second register and with a second
4 input coupled to the input node;
5 a second multiplexer with an input coupled to the second register; and
6 wherein the control block is coupled to the second comparator and the second
7 multiplexer.

1 10. The circuit of claim 6 wherein the output of the CLB control logic serving as an output of
2 the logic circuit.

1 11. A logic circuit comprising:

2 means for performing a switching function of at least one conditional branch is

3 implemented with content addressability, wherein the means for performing a switching function

4 generates an "if then else" branch that realizes a comparison of input data with previously stored

5 comparison data;

6 means, coupled to the means for performing a switch function, for selecting at least a

7 portion of the comparison data; and

8 a CLB control logic circuit having a first input coupled to receive at least a portion of the

9 input data, a second input coupled to the means for performing a switching function, and a third

10 input coupled to the means for selecting.

1 12. The circuit of claim 11 wherein the means for performing a switching function

2 comprises:

3 means for storing the comparison data; and

4 means for comparing the comparison data and the input data.

1 13. The circuit of claim 11 wherein the means for performing a switching function

2 comprises:

3 a register that stores the comparison data; and

4 a comparator coupled to the register and to an input data node that carries the input data.

1 14. The circuit of claim 1 wherein the logic circuit is realized in Field Programmable Gate

2 Array (FPGA) technology.